Mines and Metallurgy Library

The Monthly Evening Sky Map

A JOURNAL FOR THE AMATEUR — FOUNDED BY THE LATE LEON BARRITT
—NORTHERN AND SOUTHERN HEMISPHERE—

ALSO A STAR, CONSTELLATION AND PLANET FINDER MAP ARRANGED FOR THE CURRENT MONTHS — JAN. - FEB. - MAR. MORNING AND EVENING — AND PRACTICAL ANYWHERE IN THE WORLD

PUBLISHED QUARTERLY

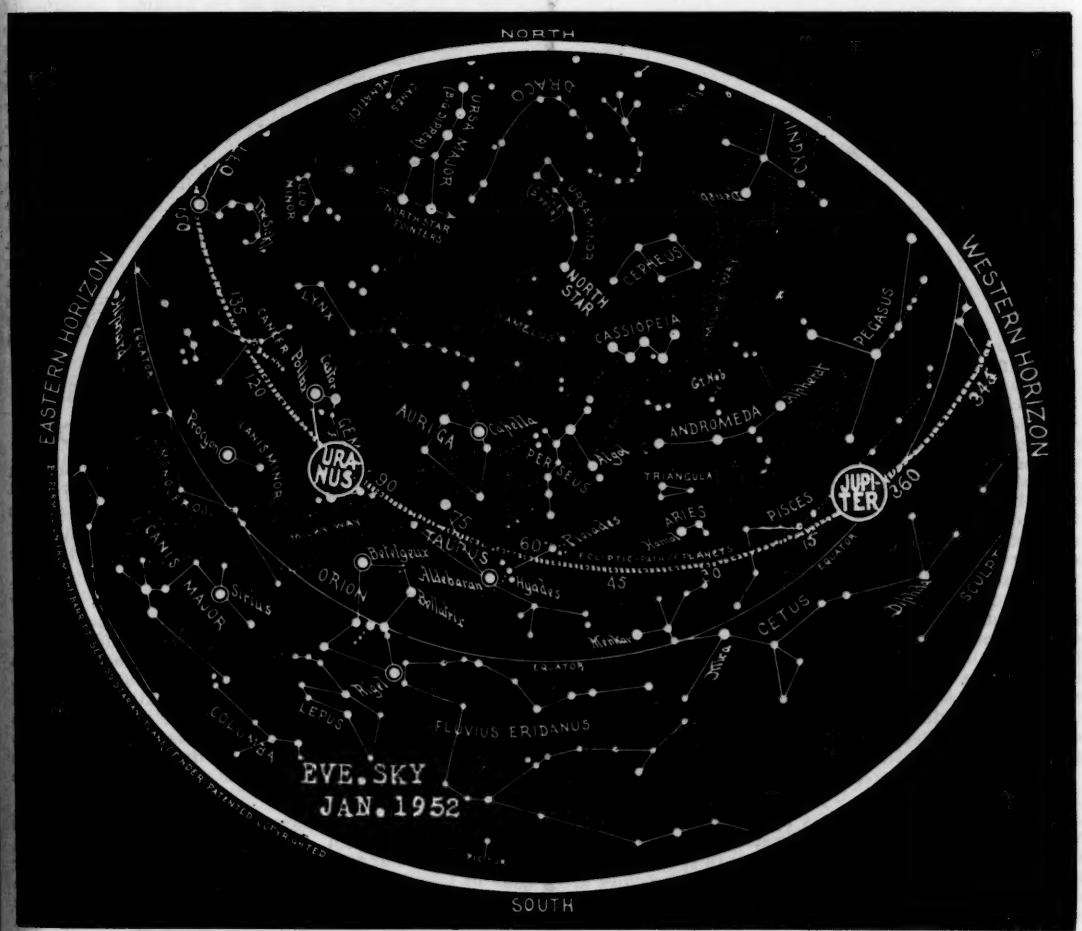
Largest Circulation of any Amateur Astronomical Journal in the World

Entered as second class matter, at Shohola, Pennsylvania, under the act of March 5, 1879

UNIVERSITY OF MINNESOTA RECEIVED '52 JAN

VOL. XLVI Whole No. 471 SHOHOLA, PA., JANUARY-FEBRUARY-MARCH, 1952 $2.00 PER YEAR 60 Cts. Per Copy

EVENING SKY MAP FOR JANUARY



Face South And Hold The Map Overhead. The Top North And You Will See The Stars And Planets Just As They Appear In The Heavens. The Arrow Through The Two Stars In The Bowl Of The Big Dipper Points To The North Star. The Star At The End Of The Little Dipper.

AT 9:00 P.M., JAN 1; 8:00 P.M., JAN. 15; 7:00 P.M., JAN. 30.

This map is arranged specifically for Latitude 40 North—New York—but is practical for ten or fifteen degrees north or south of this latitude anywhere in the United States, the southern portion of Canada and the northern portion of Mexico and for corresponding latitude in Europe.

XUM

THE IMMENSITY OF THE UNIVERSE TYCHO TO HALLEY

by A. C. Gifford, M. A., F. R, A, S

It is very hard to realise that three hundred and fifty years ago nearly everyone believed the earth to be the largest and most important body in the universe. It was exceedingly dangerous to think otherwise. The great work of Copernicus, published in 1543, had found few adherents. It was not even accepted by the great observer Tycho Brahe. Amongst the few enthusiasts who tried to spread the truth was Giordano Bruno. But he endured much persecution, and was burnt at the stake in 1600. From 1583 to 1585 he stayed in England, where he tried to convince the professors at Oxford that the Copernican system was truer than that of Aristotle. He formed a very poor opinion of English manners, even in what we think of as the great days of Queen Elizabeth, but he was far safer there than on the Continent, and he made good use of his security by writing several of his most important works. In reviewing man's realisation of the greatness of the visible universe, he decided that he should start from 11th November, 1572. On that evening Tycho Brahe first saw the new star in Cassiopeia. What could it be? It might be a small light close to us or a great one far away. Tied to the surface of the earth, how could he solve such a problem as that? He did it in a truly scientific manner. He tried to find the objects parallax. To see what this means, hold a pencil upright at arm's length, and then keeping the head quite still, shut each eye alternately. The pencil seems to jump across in front of the bookcase or of the far more distant hills. To find the distance of an inaccessible object we must observe it from each end of a measured base-line. But could Tycho find a long enough base? He thought he could. It would be hopeless to attempt to travel far enough and fast enough on the earth's surface. So he let the earth carry him, though he did not look at the matter quite in that way. The Nova and the surrounding stars rose from near the horizon almost to the zenith. If the strange object was nearer than the moon, Tycho argued that it ought, as it did so, to change its apparent place among the stars. He felt sure that he could detect a change even of a single minute of arc. He could find no change whatever, so the Nova must be beyond the moon, or as he expressed it, in the firmament itself. As the diameter of the earth is over 7900 miles, his observation showed that the Nova must be more than thirteen million miles away. That seems a very long way, but what an infinitesimal fraction of the truth! Tycho, however, had started the expansion of the known part of the universe which was destined to be very slow at first, but then to proceed at an ever accelerated speed.

In 1608 Hans Lippershey made the first telescope by placing a convex and a concave lens at the opposite ends of a tube. The next year Galileo heard of it and quickly constructed one himself, which soon revealed the moons of Jupiter. In the same year Kepler announced two of his famous three laws, but it took him twelve more years to discover the third one. Tycho's accurate observations enabled Kepler to establish the truth of the Copernican system. The earth was dethroned; the sun proved to be the centre of the solar system. Epicycles were discarded for ever. The planets moved in elliptic orbits. The chief geometrical problem of the solar system was solved, and the way was prepared for a dynamical interpretation.

In 1642, the very year in which Galileo died, Sir Isaac Newton was born. He showed that all Kepler's laws are necessary inferences from the one law of universal gravitation. The solar system thus became an orderly arrangement of moving bodies in space, although the actions and interactions of the various bodies are of appalling complexity. In 1682 Edmund Halley observed the comet which has since borne his name. He computed its orbit on Newtonian principles, found that its period was about 76 years, and then discovered that previous appearances had been observed in 1305, 1380, 1456, 1531 and 1607. He predicted its return at the end of 1758 or the beginning of 1759. Its reappearance on Christmas Day, 1758, and its nearest approach to the sun on 13th March, 1759, formed a striking verification of the law of gravitation, as perturbations by the planets had to be taken into account. The form of the solar system was thus known with considerable accuracy, but the scale was not so easy to determine. One celestial distance was fairly well known. Hipparchus in the second century B. C. found that the moon's distance from the earth is about 60 times the earth's radius. But this does not give us the scale of the solar system. To have this we must know the distance of the earth from the sun, which is a far more difficult measurement to make. It was not successfully accomplished until after 1700, but it is believed to be known now within one part in a thousand. Seen from the distance of the sun the earth's radius would subtend an angle of only 8.8 seconds, which corresponds to an actual distance of 92,897,000 miles. When once this measurement is made the distances of the other planets can be determined. From a terrestrial point of view these are enormous. Mercury is at a mean distance of 36 million miles from the sun, and Pluto is more than a hundred times as far. A globe that would just hold the solar system, as at present known, contains about 25 million times the space that existed as far as Tycho could be sure, within the firmament. Now the solar system is our astronomical unit. We do not know by observation a single other such system. But we do know that stars are suns. Some are smaller than our sun, but very many are enormously greater. And it seems extremely improbable that our small sun should be the only one among the countless millions, with a marvellous system of planets and satellites. Since, in exploring the universe, the solar system is a unit, and when we consider galaxies of stars, an almost infinitesimal one, it is worth while to try to realise its truly gigantic size. Jupiter has more than 1300 times the volume of the earth, and the sun is about a thousand times the size of Jupiter. The earth, however, appears to be denser than any other member of the system, but even in mass Jupiter exceeds the earth more than 300 times and the sun exceeds it more than 333,000 times. The earth has only one moon, whilst Mars has two, Jupiter eleven, Saturn ten and Uranus four, Neptune like the earth, has a single satellite. Saturn besides the ten moons, has a wondertul system of rings. Then, mostly between Jupiter and Mars, there are thousands of asteroids we described recently. Lastly there are associated with our system innumerable comets and meteorites. If we keep in mind a true picture of the Solar System we shall be able to appreciate the discoveries of Herschel and his successors.

Reprinted by Request

THE JANUARY CONSTELLATIONS

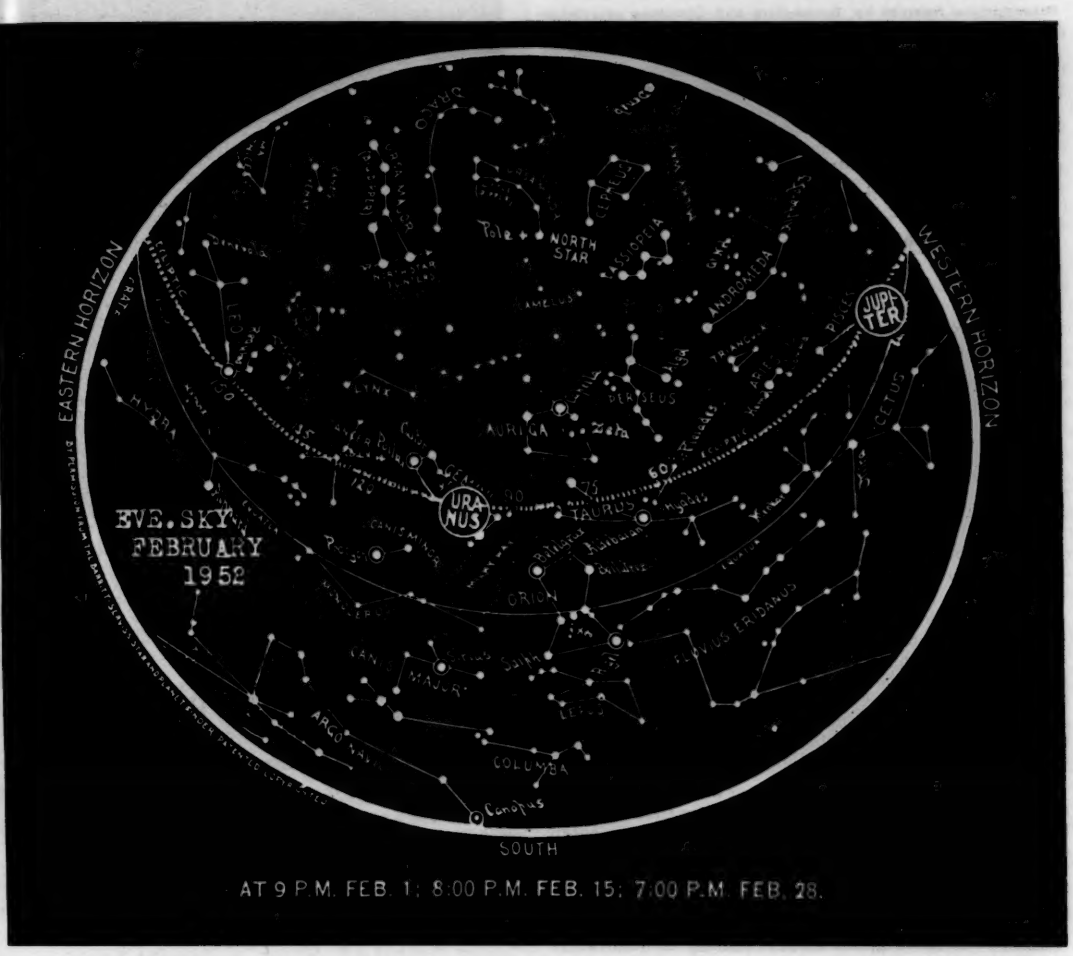
January is one of the best months to start making friends with the stars. The night sky is more brilliant and more beautiful than at any other time of the year. No season can match the nights when the brilliant glitterings overhead are matched by the icy flashing of crusted snow.

The right way to learn the constellations is to study their positions in relation to one another. The January sky is particularly well suited to this method. All of the groups visible this month can be traced by means of two familiar constellations-Orion and the Big Dipper. First find the constellations on the monthly chart, and then try to repeat the process in the sky. It will be helpful to observe at about the times given below the chart but, except where the horizon and zenith are mentioned, the relative positions cited at any time are correct.

The Dipper is just beginning to lift itself above the northeastern horizon during January evenings and seems to be standing on its handle. The North Star may be found by means of the Pointers, which have an arrow through them on the chart. (The Pointers are about five degrees apart and serve as a celestial ruler. The distance across to top of the bowl of the Dipper is about ten degrees.) The pole Star marks the end of the handle of the Little Dipper. The position of the rest of the stars in that group may be made out from the chart. Only the two stars marking the outer rim of the bowl are bright enough to be easily seen. They are below the Pole Star this month. The constellation

(Continued on Page 3)

EVENING SKY MAP FOR FEBRUARY



Draco winds between the two Dippers but it is too faint and too near the horizon to be easily traced.

The brilliant "W" or "M" of Cassiopeia is on the opposite side of the Pole Star from the Big Dipper. A line from Mizar, the double star marking the bend of the Handle of the Dipper, through the Pole Star strikes the faint end of the "W". Below Cassiopeia, in the northwest, may be seen Cepheus. A line through the two westernmost stars in the "W"strikes one end of Cepheus, while the only fairly bright star within about ten degrees of the Pole Star marks the other. Cepheus' stars are all faint and the group may be difficult to trace. There are large numbers of faint stars in this region.

The Great Square of Pegasus now appears as a huge and prominent diamond in the western sky. A line from the Pole Star through the brighter end of the "W" runs down one side of the Square and locates two of its stars. The other two should not be difficult to find.

Above Cassiopeia may be seen Perseus, which now stands almost directly overhead as the observer faces to the north. Perseus looks very much like a script capital "A." As far beyond Perseus as Perseus is from Cassiopeia may be found Taurus, with bright Aldebaran and the unmistakable Pleiades. To the north of Taurus may be seen Auriga, with its golden star, Capella. Auriga is in the form of a fairly prominent pentagon.

Andromeda is as far from Perseus as Perseus is from Auriga. It is marked by a widely spaced row of fairly bright stars running out from one corner of the Square, which supplies another aid in finding it.

Just below Andromeda lie the miniature constellations Triangulum and Aries. Both are so compact that they may be located from the chart. The planet Saturn may be seen below Pegasus and Andromeda. It marks the location of Pisces, which is too faint, to be easily traced. The rambling Cetus is also very inconspicuous.

Many of the most brilliant stars in the sky are clustered around Orion, in the southeast. There is an air of unity about the stars of the Belt and the larger quadrilateral which surrounds them. The group is unmistakable. The faint line of stars which marks the Hunter's lion skin and the tiny triangle mark of his head should be specially noted.

The stars of the Belt point down to Sirius, the most brilliant of the stars. But one hardly needs this aid to identify the "Dog Star." The rest of Canis Major is easily traced from the chart. Just below Orion may be seen the faint stars of Lepus. To the right of Rigel, in Orion, the stars of Tridanus run in a faint winding stream which extends to the head of Cetus and then in a meandering course to the South.

The rest of the winter constellations are a little difficult to trace in their entirety although in each case their brilliant members are unmistakable. Just west of and above Orion may be seen the red eye of Aldebaran and the "V" of the Hyades. If it were possible to miss them they still could be located by means of the Pleiades a compact little knot of stars just above. The Pleiades are just below Perseus. A line along the top of the Bowl of the Big Dipper point a little below Capella. Once the eye is brought within the general region of this star there can be no missing its golden

(Continued on Page 11)

XUM

$2.00 Per Year. Postpaid in the United States
PUBLISHED QUARTERLY

Subscriptions received by Booksellers and Opticians everywhere
Canada $3.00; Foreign $3.00

MRS. LEON BARRITT, Editor

Contributing Editor
Irving L. Meyer

Please make checks payable to "The Monthly Evening Sky Map"
Copyright by Maria Barritt
Box 3, Pike County, Shohola, Pa.
Telephone Milford 2310

Vol. XLVI. Shohola, Pa., Jan.-Feb.-March, 1952 Whole No. 471

AMATEUR'S FORUM

By IRVING L. MEYER, M. S.

January, 1952

THE SUN: Moves from Sagittarius into Capricornus, traveling in a northeasterly direction. It is farthest from the earth the 4th at 91.3 million miles.

THE MOON: Is at apogee (farthest from the earth) the 12th at 253,00 miles distance, and is at perigee (closest to the earth) the 26th at 222,000 miles distance.

The Moon's Phases (E. S. T.):

First Quarter	January 3 at 11:42 P. M.
Full Moon	11 at 11:55 P. M.
Last Quarter	20 at 1:09 A. M.
New Moon	26 at 5:26 P. M.

MERCURY: Moves from Ophiuchus through Sagittarius to the Capricornus boundary. It is a morning sky object all month, and is pretty well placed for observation around the 6th when it is at greatest elongation west of the Sun, 23° 2'. On that date it will appear gibbous (63% illuminated as seen from the earth), magnitude is exactly zero (considerably brighter than a standard first magnitude star), and apparent diameter is about 7". Distance the 1st is 84 million miles, increasing to 125 million miles the 31st.

VENUS: Is in the morning sky, well placed for observation just before dawn. It moves from Libra through Scorpio and Ophiuchus into Sagittarius, at geocentric distances increasing from 96 million miles the 1st to 114 million miles the 31st. It is about three-quarters illuminated, magnitude -3.6 (the brightest stellar object in the heavens), and apparent diameter about 15".

MARS: Is in Virgo all month, coming to quadrature the 21st, and rising about midnight. It is approaching the earth, and is well placed for observation. On the 1st it is 143 million miles away, magnitude is 1.3, and diameter 6"; on the 31st, it is 115 million miles away, magnitude is 0.8, and apparent diameter is 7½". On the 2nd Mars will be 10' (one third the apparent diameter of the Moon) north of Neptune.

JUPITER: Is in the evening sky in Pisces, setting around midnight. It is still bright (magnitude -1.9, and its disc is discernible in the smallest telescope (apparent equatorial diameter about 38"). Its four large moons can be seen with opera glasses, and its cloud belts in small telescopes. Distance the 15th is 477 million miles.

SATURN: Is well placed for observation in Virgo just south of the equator. It is at quadrature the fifth, and rises about midnight. On the 15th, distance is 871 million miles; magnitude is 0.9; and apparent ring diameter is 40", making it visible in small telescopes.

URANUS: Is ideally suited to observation, coming to opposition the 3rd, in Gemini. Magnitude is about 5.8 putting it on the border-line for naked eye visibility. It can, however, be seen with the unaided eye on a clear, moonless night. In the telescope, 50 diameters magnification will reveal its neat, greenish disc. At its closest approach the 4th, distance is 1657 million miles.

THE PUBLISHER OF THE MONTHLY EVENING SKY MAP will appreciate the kindly interest of its subscribers in sending the names of those whom they think to be interested in the study of the "STARS". We will take pleasure in sending them sample copies.

Orbits and Heliocentric Movements of the Planets for Jan.

NOTE: The planets are shown in their respective orbits, Two positions, one for the first, and one for the last day of the month, are given for Mercury, Venus and Mars. The arrow indicates the last day of the month. Jupiter, Saturn, Uranus and Neptune are shown in the mean position for the current month.

PLANETARY CONFIGURATIONS

Eastern Standard Time

January, 1952

January 2	12:00 Noon	Conjunction, Mars and Neptune; Mars north 0° 10'.
January 3	4:00 AM	Opposition, Uranus and Sun.
January 3	3:15 PM	Conjunction, Jupiter and Moon; Jupiter south 4° 43'.
January 4	4:00 PM	Earth in Perihelion.
January 5	8:00 PM	Quadrature, Saturn and Sun.
January 6	3:00 AM	Mercury greatest elongation west 23° 2'.
January 11	4:23 AM	Conjunction, Uranus and Moon; Uranus south 3° 34'.
January 12	5:00 PM	Quadrature, Neptune and Sun.
January 18	9:00 AM	Mercury in descending node.
January 19	3:48 AM	Conjunction, Saturn and Moon; Saturn north 6° 49'.
January 19	3:51 PM	Conjunction, Neptune and Moon; Neptune north 6° 18'.
January 20	7:29 AM	Conjunction, Mars and Moon; Mars north 6° 55'.
January 21	6:00 PM	Quadrature, Mars and Sun.
January 24	2:00 AM	Neptune stationary in Right Ascension.
January 24	2:24 AM	Conjunction, Venus and Moon; Venus north 6° 13'.
January 25	11:23 AM	Conjunction, Mercury and Moon; Mercury north 2° 48'.
January 25	3:00 PM	Saturn stationary in Right Ascension.
January 28	4:00 PM	Mercury in Aphelion.
January 31	6:45 AM	Conjunction, Jupiter and Moon; Jupiter south 5° 6'.

PLANETARY CONFIGURATIONS

Eastern Standard Time

February, 1952

February 7	8:33 AM	Conjunction, Uranus and Moon; Uranus south 3° 41.
February 9	9:00 PM	Opposition, Pluto and Sun.
February 11	9:00 PM	Partial eclipse of the Moon.
February 15	8:58 AM	Conjunction, Saturn and Moon; Saturn north 7° 1'.
February 15	9:31 PM	Conjunction, Neptune and Moon; Neptune north 6° 24'.
February 17	10:00 AM	Conjunction, Mars and Moon; Mars north 7° 22'.
February 18	12:00 AM	Mercury greatest heliocentric latitude south.
February 21	10:00 PM	Superior conjunction, Mercury and Sun; Mercury north 1° 55'.
February 22	12:00 AM	Venus in descending node.
February 22	9:39 PM	Conjunction, Venus and Moon; Venus north 2° 35'.
February 25		Total eclipse of the Sun.
February 25	11:23 AM	Conjunction, Mercury and Moon; Mercury south 2° 45'.
February 28	2:40 AM	Conjunction, Jupiter and Moon; Jupiter south 5° 25'.

Orbits and Heliocentric Movements of the Planets for Feb.

NOTE: The planets are shown in their respective orbits. Two positions, one for the first, and one for the last day of the month, are given for Mercury, Venus and Mars. The arrow indicates the last day of the month. Jupiter, Saturn, Uranus and Neptune are shown in the mean position for the current month.

AMATEUR'S FORUM

By IRVING L. MEYER, M. S.

February, 1952

THE SUN: Leaves Capricornus, traveling northeastwardly into Aquarius. Distance from the earth the 1st is 91.5 million miles, and on the 29th is 92.0 million miles.

There is a total eclipse of the Sun on the 25th, invisible in the western hemisphere. The eclipse will be visible as a partial over all of Europe, most of Africa, and Asia, while the path of totality crosses central Africa, Arabia, Persia, and Russia.

THE MOON: Is farthest from the earth the 8th at 252,000 miles distance, and is closest the 23rd at 224,000 miles.

The Moon's Phases (E. S. T.):

First Quarter	February 2 at	3:01 P. M.
Full Moon	10 at	7:28 P. M.
Last Quarter	18 at	1:01 P. M.
New Moon	25 at	4:16 A. M.

There will be a partial eclipse of the Moon on February 10th, visible over most of Europe and Africa, and the Western Hemisphere. Only the end of the eclipse will be observable on the west coast of North America.

Circumstances of the eclipse (E. S. T.):

Moon enters penumbra	February 10 at	5:06 P.M.
Moon enters umbra	10 at	7:03 P.M.
Middle of eclipse	10 at	7:39 P.M.
Moon leaves umbra	10 at	8:15 P.M.
Moon leaves penumbra	10 at	10:12 P.M.

Magnitude of eclipse—9% of Moon's diameter.

MERCURY: Moves through Capricornus and well into Aquarius during the month, and is in Superior Conjunction with the Sun on the 21st, thereafter being an evening sky object, but too close to the Sun to be observable. Maximum geocentric distance, the 14th, is 130 million miles.

VENUS: Holds forth in the morning sky, moving from Sagittarius into Capricornus. Its great brilliance makes this object easily visible in the morning twilight, low in the East. Distance is increasing; from 115 million miles the 1st to 130 million miles the 29th.

MARS: Moving from Virgo into Libra, rises early in the evening, and is becoming well placed for observation. Its distance is decreasing (from 114 million miles the 1st, to 88 million miles the 29th), resulting in a corresponding increase in brightness (0.8 to 0.2 magnitude) and apparent diameter (7.7" to 9.8").

JUPITER: In Pisces, sets early in the evening. Though always a bright object, it is no longer well situated for observation, and will disappear from the evening sky shortly. Distance the 15th is 517 million miles.

SATURN: In Virgo, rises shortly after sunset, and is becoming increasingly better placed for observation. Its ring system can be seen in small telescopes, as well as its brightest moon, Titan. Distance from the earth the 15th is 828 million miles.

URANUS: Rides high in the northern heavens, in Gemini, and is just past opposition. It is well placed for observation, and can be seen easily in opera glasses. Careful charting of the stars to the 6th magnitude in the area will enable the planet's motion to point it out within a week or two. It is a 6th magnitude object, and distance the 15th is 1681 million miles.

NEPTUNE: A few degrees east and south of Saturn, and just north of Spica, in Virgo, is also approaching opposition. Well placed for observation, but its faintness, magnitude 8, makes it a telescopic object only. Distance the 15th is 2763 million miles.

PLUTO: Is an exceedingly faint planet, and cannot be seen in small telescopes. To locate this planet visually, the telescope must be 12 inches or larger, accurate positions must be available.

IN THE STARS IS WORLD OF PEACE

There is nothing in the world more beautiful and inspirational than the sky on a clear night. To all lovers of thought, this infinite and majestic display of natural phenomena affords an ever ready outlet for repressed imaginations and a haven of rest for tired and worried minds.

If you are egotistic, look at the stars. Their majesty will overwhelm your egotism. If you have an inferiority complex, first remember that you are greater than any of those vast distant bodies, for you know that you exist. They can know nothing of their existence.

If there are, in some obscure portion of your mind, some desires that you thought were impossible to satrius into Pisces at distances of 92.1 million miles the isfy; if you have some wishes—even your wildest dreams, direct them, as thoughts, to the stars - - into the universe of national law. You may find later they reappear as realities.

DEWITT CRANSHAW

Calvin, Oklahoma

IN APPRECIATION

I desire to take this opportunity to thank my many friends and subscribers for the splendid support and co-operation I have received in my effort to continue the publishing of the Monthly Evening Sky Map. It is particularly gratifying to know that the old friends of my late husband, Leon Barritt, appreciate his work of 30 years devoted to popularizing astronomy, and desire to see that work continued.

The receipt of many hundreds of renewals, and new subscriptions since my last letter, has made it possible for me to continue. So many former subscribers, both men and women, have spoken to their friends and club-members about astronomy that several amateur astronomical clubs have been formed, and they are now all subscribers to the Monthly Evening Sky Map, purchasing also for their clubs, a Star & Planet Finder.

If any others desire to form such clubs, I shall be more than glad to cooperate and give such group without any charge a descriptive chart showing all the heavenly bodies, this chart is suitable for lecture and instruction purposes.

Thanking you again for your friendship and patronage.

Maria Barritt

THE MEANING OF TWO ASTRONOMICAL WORDS

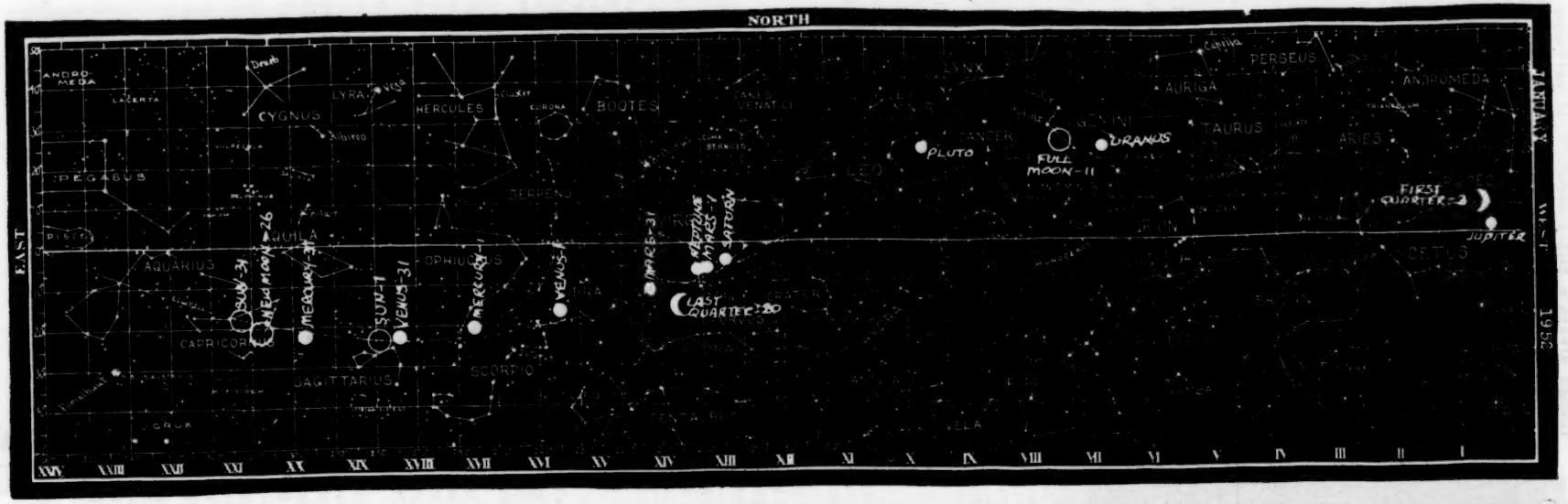
APOGEE – PERIGEE

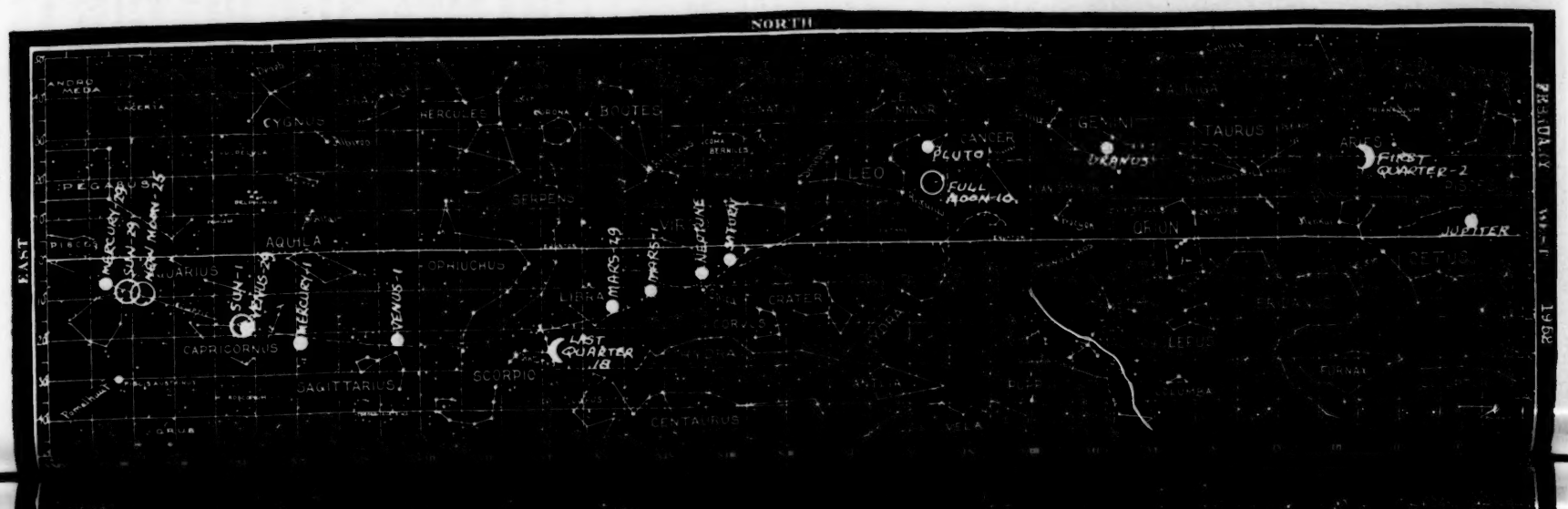
Apogee. Is the farthest point in the moon's orbit which is farthest from the earth.

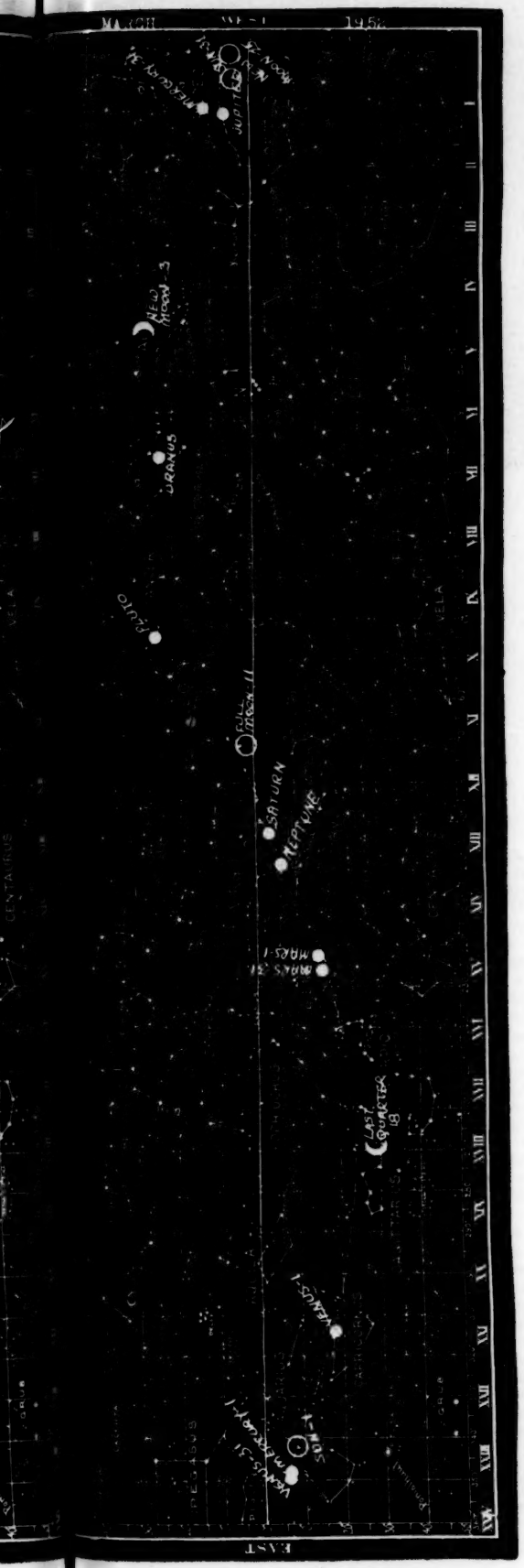
Perigee. Is the point in the moon's orbit which is nearest to the sun. This point lies at the extremity of the major axis.

A MERCATOR PROJECTION OF THE STAR FIELD FOR 50 DEGREES NORTH AND 65 SOUTH OF THE EQUATOR

The Star Field makes an apparent complete revolution westward every 24 hours, hence the hourly division from I to XXIV, but this has no relation to the time that any portion of the map is in view.
Practical as a Star, Constellation and Planet Finder for the current months— —January-February-March, 1952—Anywhere in the world.
Showing also the position of the Sun at the beginning and ending of the month and the position of the Moon at it's several phases.







Nov. 5 Oct. 22 Oct. 5 Sept. 20 Sept. 5 Aug. 20 Aug. 5 July 20 July 5 June 20 June 5 May 20 May 5 Apr. 20 Apr. 5 Mar. 20 Mar. 5 Feb. 18 Feb. 2 Jan. 20 Jan. 5 Dec. 20 Dec. 5 Nov. 20
THE DATE BELOW EACH NUMERAL WILL SHOW WHEN THAT SECTION OF THE MAP WILL BE ON THE MERIDIAN—DUE SOUTH—AT 9 P. M. OR AN HOUR EARLIER FOR EACH NUMERAL WEST OF THIS DATE AND AN HOUR LATER FOR EACH NUMERAL EAST.

THE STAR OF FEBRUARY – SIRIUS

Sirius has been the "Dog Star" for at least four thousand years The idea originated in Egypt, where one of the star's hieroglyphs was a picture of a dog. This figure represented Sirius as the predictor of the annual overflow of the Nile. The name seems to have spread to neighboring races in the valley of the Euphrates. We find Akkadian and Assyrian references to "the Dog" and "the Star of the Dog." The Phoenicians may also have borrowed their title of "the Barker" from Egypt. Among the early Greeks, canine names seem to have first been applied to the star and later to the constellation. Homer apparently uses his "Keon" (the Dog) for the star alone. Hesiod and Aratos use the same name for both star and group When the Romans borrowed the Greek figure of "Canis Major" they designated its brightest star by the same name. So Sirius was with them "Canis-Canicula" and "Canis" or "Canicula Candens". Those names were perpetuated by medieval scholars and eventually became translated into modern European tongues.

According to Allen, the Greek poet Asclepiades was first to mention the connection between the "Dog Star" and canine madness. Asclepiades lived during the third century before Christ. But the idea that Sirius caused summer's heat by adding its light to that of the sun had been current for many centuries. Homer may have had it in mind when he wrote of the star, "Brightest of all is he, yet for an evil sign is he set, and bringeth much fever upon hapless men." Hesiod (8th century B. C.) implies it in the figure. "When Sirius parches head and knees, and the body is dried up by reason of heat, then sit in the shade and drink." The idea is quite possibly older than either Homer or Hesiod, since the Egyptians were careful observers of the star and knew that it rose with the sun at the hottest time of year. At any rate, both ideas continued down to the fourth century A. D. when, according to Admiral Smyth. the Alexandrian essayist Theon the Younger "left a full formula to find the exact time of the dog-star's rising; twenty days before which, and twenty days after, included the period of perspiration, hydrophobia, and other evils." The Romans had by that time borrowed the idea but, because they were no observers, they set the dates of their "dies canicularlae" inaccurately. Since then each nation has placed its "dog-days" whenever its worst weather fell and little attention is payed to the actual position of the star.

It is often suggested that the name "Sirius" came from the same root as "Osiris" since the Eyptians identified the star with that god. However this may be, the word first appears in Hesiod and seems to have been understood as an adjective meaning "scorching" or "sparkling". It was extensively used for the sun and was occasionally applied to the other stars. The adjective may have evolved from the Phoenician noun for "sun" but this in turn seems to have grown from an older root—possibly in the Sanskrit. That would explain why the Persians and Arabs have a similar name for the star. The Arabic "Al Shi'ra" does not seem to be a borrowing from the Greek—especially since Ptolemy only used the Homeric title of "Keon". (The most extensive borrowings of the Arabic astronomers were from the works of Ptolemy and Hipparchus.)

The Assyrian and Akadian names of "the Dog of the Sun" and "the Star Dog of the Sun" are probably carry-overs from Egypt. The priests of that country followed the star carefully. Its heliacal rising (rising with the sun) regulated their calendar from 3000 to 300 B. C. (One of thir hieroglyphs for the star was a porter bearing keys—symbolical of the opening of the New Year. Another was just what we use today—a two-headed figure, one head an old man's and the other an infant's. In the course of these years the star was associated with the goddess Isis (in her innumerable forms) and the gods Osiris and Thoth. The mythology connected with each of these gods was nothing more than an allegorical description of certain astronomical phenomena. Nevertheless, temples were built to the star in each of its guises. Sirius was also defined as the Niel Star under titles ranging between Sihor Sothi, Shed and Sot. (Separate hieroglyphs represented each of its deified forms.) During this period dates seem to have been reckoned over a "Great Year of 1460 years which was defined by the motions of Sirius. This period is variously known as the "Sothic", "Sothaic" or "Canicular Cycle."

(Continued on Page 8)

XUM

The worship of the stars seems to have been carried over to Greece and may have entered to famous "mysteries" of the temple of Ceres at Eleusis. These "Eleusinian mysteries" later became part of the state religion of Athens.

There are two opposed traditions about Sirius' influence on the affairs of men. The older is probably that which makes the star fortunate—since in ancient Egypt it was highly regarded as the precursor of the Nile's flood. It seems to have been the Assyrian "Creator of Prosperity" and much the same character is attributed to it by the Persians. When astrology matured in its "classical" form, both Dog Stars became signs of wealth and reknown. Whatever evil powers were assigned to Sirius were probably corollaries of its alleged influence in producing the pestilential summers of the Mediterranean countries.

Siirus is usually described as "brilliant white". White stars twinkle the most and this particular one is winking incessantly. As far back as 300 B. C. Aratos remarked that it "sparkles with more life than any other star". Because it is so bright it can be seen very near the horizon, where refraction heightens the tremulous quality of its light. Mrs. Martin gives one of the best descriptions of Sirius rising when she says, "He comes richly bright in many colors, twinkling fast and charging with each motion from tints of ruby to sapphire and emerald and amethyst. As he rises higher and higher in the sky he gains composure and his beams now sparkle like the most brilliant diamond—not a pure white, but slightly tinged with iridescence." Miss Clarke says that when the star is on the meridian it is "pure white, with a cast of blue" while Garrett Serviss declares it has a shade of green "which requires watching to be detected." The writer has seen the star high up and seem for several minutes as pure and deep a blue as Vega. If conditions are not good, however, the culminating star will answer to Lord Tennyson's press description:

The fiery Sirius alters hue and bickers
into red and emerald.

Since the star's color is so indeterminate, it is not surprising to find a tradition of its changing. In an 1868 "Handbook of the Stars" we find this startling passage: "Sirius was described as a fiery red star by the ancients. Some years ago it was pure white, while it is now becoming of a decided green color." The last claim is apparently based on what Serviss later described as "a shade of green which requires watching". At the beginning of the nineteenth century several writers took great pains to collect references from Greek and Latin authors which indicated that the ancients considered Sirius red. Their arguments have nearly all proven philologically unsound. In other cases, such as Horace's use of "rubra Canicula", there is room to believe that the adjective referred to Sirius' supposed heating ability. But, as Admiral Smyth summarizes it, "Senaca has an admission that the redness of Sirius was so strong as to excel that of Mars; and Ptolemy says it was of the same color as Cor Scorpii. These witnesses, both men of character and trust, are directly opposed to Hyginus, who asserts that the star was white, 'candor flammae candorum'." (Hyginus was an astronomic poet of the time of Christ.) It seems likely that we can best explain these differences by assuming the star looked the same then as now. The most appropriate of all its names was given by the Arabs. They called it "Barakish"—He of a Thousand Colors.

Physically, Sirius is an early type star (Spectrum AO), with a diameter a bit under twice the sun's. It is 8.8 light years away. It shines 27 times more brightly than the sun and the theoretical Centigrade surface temperature for stars of its type is 10,700 degrees. Its mass is just under two and a half times the sun. The most remarkable feature is its companion star, which is a white dwarf. (Someone has facetiously dubbed it "The Pup"!) The presence of this star is very strange if we assume that members of a binary system have a common origin. It has led some astronomers to speculatively extend the planetary "capture theory" to the stars.

Sirius owes its apparent brilliance to its nearness rather than intrinsic brightness. It is of magnitude minus 1.58 and the brilliantest star in the sky. (It is 9.7 times as bright as Altair, a typical first magnitude star.) Sir William Herschel once stated that when this

(Continued on Page 9)

Orbits and Heliocentric Movements of the Planets for March

AMATEUR'S FORUM

By IRVING L. MEYER, M. S.

March, 1952

THE SUN: Crosses the equator on the 20th, thereby entering the northern heavens. It travels from Aqua- 1st, increasing to 92.8 million miles the 29th.

THE MOON: is farthest from the earth the 6th at a distance of 252,000 miles, and is nearest the earth the 22nd at 227,000 miles.

The Moon's Phases (E. S. T.):

First Quarter	March 3 at	8:43 A. M.
Full Moon	11 at	1:14 P. M.
Last Quarter	18 at	9:40 P. M.
New Moon	25 at	3:12 P. M.

MERCURY: Moves northeastwardly from Aquarius into Pisces. It is in the evening sky, reaching greatest elongation east of the Sun, 18° 31', on the 18th. For about a week around that date, this elusive planet will be visible low in the west just after sunset. It will be a bright object, magnitude -1.2, and its 5" diameter disc, is seen even in small telescopes, will appear gibbous- like a 10 or 11 day old moon. Geocentric distance decreases from 121 million miles the 1st to 60 million miles the 31st.

VENUS: Moves from Capricornus into Aquarius, as a morning sky object. This intensely bright planet can be seen low in the east just before sunrise. Its distance increases from 130 to 143 million miles during the month, but brightness remains nearly constant.

MARS: In Libra, comes to a halt the 24th, and thereafter retrogrades (moves westward rather than eastward). Though still about a month from opposition it is a prominent object, rising shortly after sunset. Its distance continues to decrease—from 88 million miles the 1st to 65 million miles the 31st.

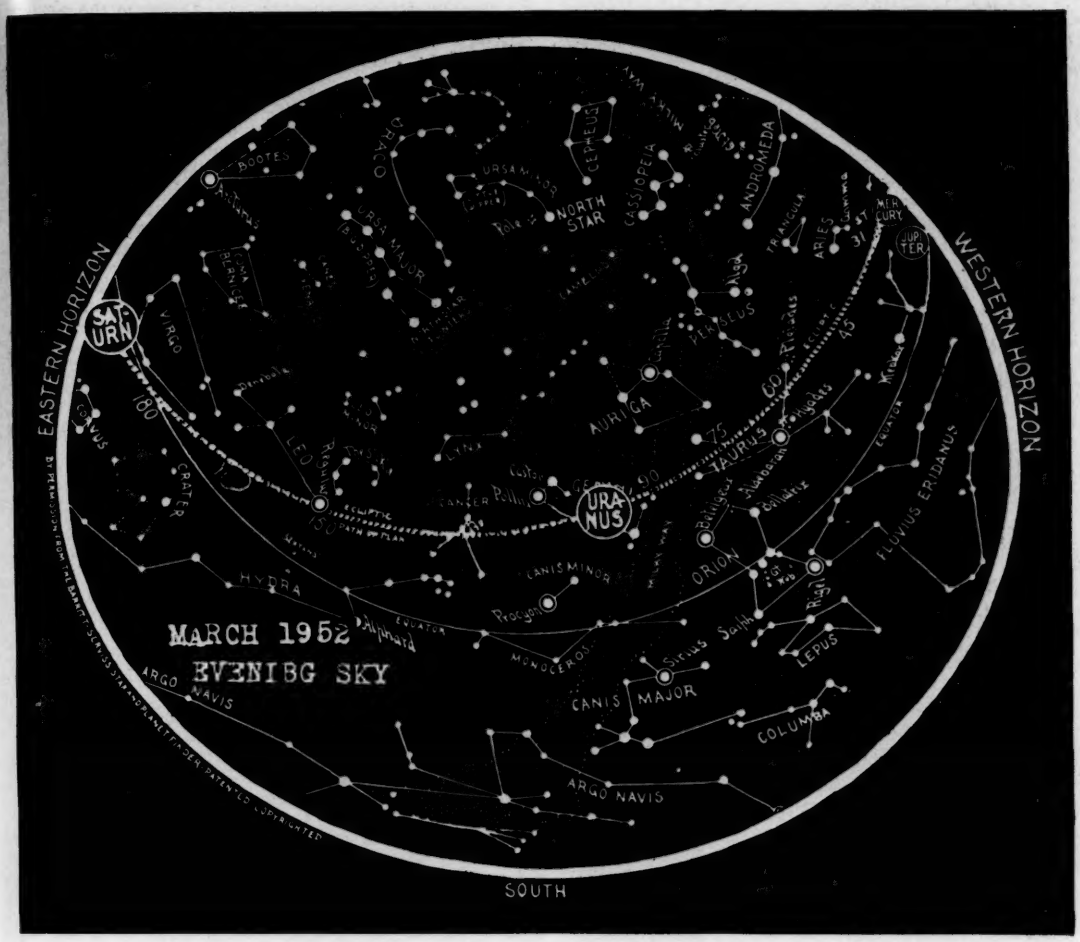
JUPITER: An evening sky planet all month, is too close to the Sun for satisfactory observation. It is in Pisces, 542 million miles away on the 15th.

SATURN: In Virgo, is well placed for observation. It rises just after sunset, and sets after sunrise. It is a bright, very interesting planet, particularly as seen through the telecope. On the 15th, distance is 803 million miles, resulting in an apparent ring diameter of 43" and magnitude 0.6.

URANUS: Is in Gemini, very well placed for observation. It can be seen with the unaided eye, and its disc (4" in diameter) can be perceived easily under a telescopic power of 50 diameters. Distance the 15th is 1720 million miles.

NEPTUNE: Is a few degrees south-following Saturn, in Virgo. It is close to opposition, rising shortly after sunset. It is a telescopic object only. Distance the 15th is 2732 million miles.

EVENING SKY MAP FOR MARCH



AT 9:00 P.M., MAR 1; 8:00 P.M., MAR 15; 7:00 P.M., MAR 30.

This map is arranged specifically for Latitude 40 North—New York—but is practical for ten or fifteen degrees north or south of this latitude anywhere in the United States, the southern portion of Canada and the northern portion of Mexico and for corresponding latitude in Europe.

star was about to enter the field of his great telescope the glare was as effective in cutting out faint objects as the illumination at the approach of dawn. Allen adds that the star was "even seen in broad sunshine with the naked eye by Bond at Cambridge, Massachusets, and by others at midday with very slight optical aid."

The star is receding from us at eight miles a second and moving across the sky at ten. Its "proper motion" carries it a half degree every fifteen hundred years and it must have crossed the Milky Way the last fifty thousand. All Sufi cites a story that Sirius was once on the other side of the Milky Way in connection with its title of "Al Abur"—the Passage. Such a myth would have had to have been handed down by the men of the Stone Age. Allen says that the name "refers to the myth of Canopus' flight to the south". Flammarion explains similar stories on the ground that the races telling them must have migrated from a land south of the equator, where they faced north to see stars we see when facing south. During such a journey Sirius would change from the left to the right side of the galaxy, even though it always lay to the west. There is no reason to believe that an astronomical tradition could have survived for so many years. Few that are known today have lasted five thousand.

PLANETARY CONFIGURATIONS

Eastern Standard Time

March, 1952

March 5— 2:14 PM	Conjunction, Uranus and Moon; Uranus south 3° 44'.
March 8—12:00 AM	Mercury in Ascending Node.
March 12— 4:00 PM	Mercury in Perihelion.
March 13—11:59 AM	Conjunction, Saturn and Moon; Saturn north 6° 58'.
March 14— 2:15 AM	Conjunction, Neptune and Moon; Neptune north 6° 21'.
March 16— 2:30 AM	Conjunction, Mars and Moon; Mars north 7° 18'.
March 18— 1:00 AM	Uranus stationary in Right Ascension.
March 18— 5:00 PM	Mercury greatest elongation east, 18° 31'.
March 20—11:14 AM	Sun enters Aries; Equinox.
March 22—10:00 PM	Mercury greatest heliocentric latitude north.
March 23— 9:22 PM	Conjunction, Venus and Moon; Venus south 2° 17'.
March 24—11:00 PM	Mars stationary in Right Ascension.
March 26— 4:00 AM	Mercury stationary in Right Ascension.
March 26— 5:50 PM	Conjunction, Mercury and Moon; Mercury soutr 0° 44'.
March 27—12:04 AM	Conjunction, Jupiter and Moon; Jupiter south 5° 40'.
March 27— 3:00 PM	Venus in Aphelion.
March 30— 1:00 PM	Quadrature, Uranus and Sun.

MORNING SKY MAP FOR JANUARY
JAN. 1952 MORNING SKY
AT 5 A. M. JAN. 1 4 A. M. JAN. 15 3 A. M. JAN. 31
MORNING SKY MAP FOR FEBRUARY
EASTERN HORIZON
WESTERN HORIZON
FEB. MORNING 1952
AT 5:00 A. M. FEB. 1 4:00 A. M. FEB. 15 3:00 A. M. FEB. 29
MORNING SKY MAP FOR MARCH
NORTH
EASTERN HORIZON
WESTERN HORIZON
MARCH MORN SKY
MARCH 1952
SOUTH
AT 5:15 A. M. MARCH 1 4:15 A. M. MARCH 15 3:15 A. M. MARCH 31

THE MARCH CONSTELLATIONS

March brings spring weather on earth and spring stars in the sky. The Winter Hexagon, which we described in detail last month, still takes up the western half of the heavens. But in the east we see the less brilliant groups which we associate with warmer weather. To many of us, these unspectacular stars are more friendly than winter's brilliants. Your reporter has always had a special affection for Arcturus which returns to us again March evenings.

The most prominent of the new groups is the Big Dipper which has been hiding in the poor visibility of the horizon and now has made its way halfway up to the zenith. It is no far-fetched figure to compare this annual spring awakening to the end of the annual hibernation of a bear. The bear's forepaws, which must be added to the Dipper to complete the constellation of Ursa Major, are now well placed for observation. They are marked on the chart by two triangles and a lone star. The region is rich in pairs and well worth exploring with naked eye or opera glass. Besides that, any full fledged star-gazer should feel ashamed to be unable to trace the full figure of this most important constellation in the sky. A familiarity with the region is especially necessary for those who would like to become amateur meteor plotters.

Nestled under the handle of the Dipper lies Cor Caroli and the handful of faint stars which marks the Hunting Dogs. One of these faint stars is unusually red and is also a variable. We may have more to say about it next month. Its color gave rise to its name: La Superba.

Bootes rises behind the Dipper and Arcturus may be located by following the curve of the Handle. Watch the color changes in this star as it clears the horizon and as sky conditions vary from night to night. It seems to your reporter friendlier when low. Then it is burnished and burning. High up, it assumes the cold dignity of a pure golden glow.

In the southeast, Virgo is rising, but Spica has not yet appeared. Further south may be seen the smaller constellations, Corvus and Crater. Corvus is not well up on the chart, but it has cleared the horizon by nine o clock at the end of the month. There is an old myth that the hare resents the call of the crow and makes a point of keeping out of his way. As a result Lepus does not rise until the Crow has set and when the Crow rises Lepus makes haste to set. According to the myth, the two are never seen in the sky together but this is not true. It is possible to see them both at nine P. M. around March 11 or at eight P. M. at the end of the month Lepus is so low that conditions must be good for one to make him out. Even before he has actually set, his stars shrink out of sight in the mists of the horizon.

There is a parallel myth about Orion and Scorpio, which is more accurate. If you recall the classical story, you will remember that Orion was a powerful giant who offended everyone by his vanity. Juno sent a scorpion to humble him. The tiny scorpion felled the giant by stinging his heel but not before that same heel had crushed out his own life. Diana, goddess of chase, begged a place in the sky for Orion because he had been mightiest of all huntsmen. Juno jealously demanded a similar honor for her scorpion. Harrassed Jupiter had to place the two on opposite sides of the heavens so that they could harm each other no more. His arrangement is effective. When the row of stars marking Scorpio's head appears on the south-eastern horizon only Betelgeux may be seen in the west. Both are so low that only an observer blessed with remarkable horizon "seeing" could view them at the same time. When Orion rises, Scorpio has long since set.

The Lion is the dominating constellation of the south-east. Regulus is the only first magnitude star in that quadrant. The "Sickle" which marks the big cat's arched neck and head is one of the few configurations for which we have an indigenous English name. Off hand the writer would say that the "Dippers" were the only others. (The name "Seven Sisters," after all, refers to the classical story of the Pleiades.) We recall the special meaning these stars had for us in school. When the group rose we knew that it would move further and further west as the spring wore on and that when it

was setting just after the twilight June would bring summer's release.

Above Leo lies the unfamiliar little asterism, Leo Minor. It is chiefly noteworthy for the variable R Leo Minoris, which may occassionally be picked up in an opera glass.

West of the Lion, nearer the winter constellation Gemini, lies faint Cancer and the famous "Beehive." (That seems to be a name originated by English speaking people. Classical observers stuck to variants of "Little Cloud" and "Manger." Just below Cancer may be seen the pentagon marking the Head of Hydra and further down lies brick-red Alfard, all alone. The first half of the long and sliding serpent runs down below Leo but soon its nearness to the southeastern horizon makes it hard to trace. The elongation of this figure is amazing. While observing Alfard and the Head at this time of year your writer often recalls how early in her years of star-gazing she confused gamma of this same constellation with Spica. Yet Spica is not even above the horizon now!

At nine P. M. on March first that part of Argo Navis which is visible to northern observers comes to the meridian. This group is worth exploring out of curiousity. There is something about picking out part of Argo that makes one feel a little nearer to the southern stars, and makes it seem a little more plausible that some day Canopus and the Cross may swim into your view. The stars which we do see are in the part of Argo known as Puppis, the Stern or the Poop. They are all faint and it takes perfect seeing and a clear-focusing glass to bring them out. There are several clusters here but even with a telescope there is only a long chance of getting a satisfactory view of them.

(continued from page 3)

light. Next to Capella there is a small triangle of fourth magnitude stars known as the Kids. (They are not shown on the chart.)

Gemini, the Twins, are easily found above and to the left of Orion. They are of almost equal brightness. The rest of the constellation is made up of two parallel lines of stars running toward Betelgeuze, in Orion.

Just below the Twins may be seen Procyon and its third magnitude neighbor. These two stars, often spoken of as the puppy, make up all that is usually seen of the constellation Canis Minor. An equilateral triangle is formed by Procyon, Sirius and Betelgeuze, the bright star in the upper left corner of Orion.

East of the brilliant winter group a few spring constellations are rising. Just east of the "Pointers" may be seen the sickle of Leo and the bright star Regulus, which is just over the horizon. If the line of the "Pointers" is traced backwards it runs into the center of the constellation Leo, a little behind the "Sickle." The faint zodiacal constellation Cancer lies between Leo and Gemini. A line from Capella through the brighter of the Twins runs by (*a*) alpha Cancri, the brightest and lowest star of that group. Praesepe, the Bee-Hive, is in this constellation. Search for it with a field glass. The Head of Hydra is just below Cancer. The Head is such a compact group that it should not be difficult to find.

The beginner will find it lots of fun to go star-hunting. By using patience and trying his luck on several nights he will make many friends among the stars.

THE BARRITT-SERVISS

—

THE BARRITT-SERVISS STAR AND PLANET FINDER

—

THE HEAVENS WITHOUT A TELESCOPE
A Moving Picture of The Universe

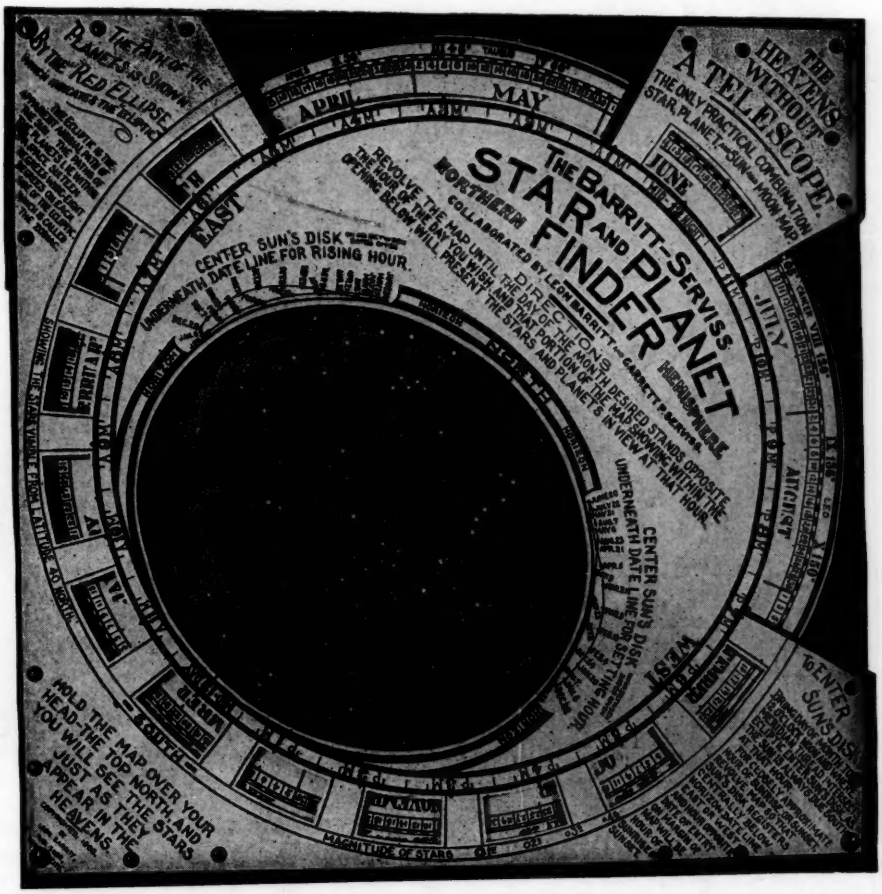
—

THE ONLY COMBINATION SUN, MOON, STAR AND PLANET FINDER
The Chart is 15 x 15 inches square and has a revolving disk map showing all the stars visible to the naked eye in the Northern or Southern Hemisphere (be sure to mention which Hemisphere when ordering) and is practically useful anywhere in the United States or in corresponding Latitudes in Europe, or South America.

Price $7.00

CELESTIAL MAP PUBLISHING

Box 3, Pike County
Shohola, Penna.



XUM

LYNX
CASTOR
POLLUX
GEMINI
ALHENA
THE TWINS
CANCER
THE CRAB
ACUBENS
PROCYON
CANIS MINOR
THE LESSER DOG
MONOCEROS
SIRIUS
CANIS MAJOR
THE GREATER DOG
LEO
REGULUS
THE LION
HYDRA
ALPHARD
THE WATER SNAKE
MENKALINAN
CAPELLA
ALNATH
ALDEBARAN
THE CHARIOTEER
PERSEUS
ALGOL
PLEIADES
TAURUS
THE BULL
TRIANGULUM
ALMAK
ARIES
THE RAM
BETELGEUSE
RIGEL
BELLATRIX
ORION
THE HUNTER
SAIPH
MINTAKA
ALNILAM
ALNITAK
LEPUS
CURSA
MENKAR
CETUS
THE WHALE
MIRA
ERIDANUS
ZAURAK
THE RIVER
ACAMAR
PISCES
THE FISHES
EAST
SOUTH
WEST
STARS OF A WINTER NIGHT